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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/809,548	03/15/2001	Steven H. Reichman	RL-1970	5475

7590 03/31/2005

Allegheny Technologies Incorporated
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EXAMINER	
JOHNSON, STEPHEN	
ART UNIT	**PAPER NUMBER**
3641	

DATE MAILED: 03/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Interview Summary	Application No. 09/809,548	Applicant(s) REICHMAN, STEVEN H.	
	Examiner Stephen M. Johnson	Art Unit 3641	

All participants (applicant, applicant's representative, PTO personnel):

(1) *Stephen M. Johnson*. (3)_____.

(2) *Kami Lammon-Hilinski*. (4)_____.

Date of Interview: *22 March 2005*.

Type: a)☒ Telephonic b)☐ Video Conference
c)☐ Personal [copy given to: 1)☐ applicant 2)☐ applicant's representative]

Exhibit shown or demonstration conducted: d)☐ Yes e)☒ No.
If Yes, brief description: _____.

Claim(s) discussed: *newly proposed (see attachment)*.

Identification of prior art discussed: *Tsilevich and Paine et al.*.

Agreement with respect to the claims f)☐ was reached. g)☒ was not reached. h)☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: *Discussed rules regarding entry of amendments after final. Discussed Tsilevich and Paine et al. as directed to claim 55*.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

STEPHEN M. JOHNSON
PRIMARY EXAMINER

703-306-4158
Examiner's signature, if required

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

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Pages •	13
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Client ID/Matter No. •	0215785/0106

① NM ?
② IDS issues ?
③ reads over applied art ? or is obvious over applied art ?
④ reads over new combin of current art of record ?
⑤ reads over art not of record, i.e. further searching?

COMMENTS: Re.: U.S. Patent Application No. 09/809,548 to Reichman
Attny. Docket No.: RL-1970/00384

Please find attached a set of proposed amendments for discussion on Tuesday, March 22, at 2:00 pm.

Best Regards,
Kami Lammon-Hilinski

When you are sending to us, please be sure to include a cover sheet with your transmittal and a telephone number where you can be contacted in case of equipment malfunction.

Transmitted by: **Time:**

PROPOSED AMENDMENTS- FOR DISCUSSION PURPOSES ONLY
DO NOT ENTER

1. (Currently Amended) An armor capable of withstanding penetration by a projectile impacting the armor, the armor comprising at least one energy absorbing layer, said at least one energy absorbing layer consisting essentially of a metallic material that absorbs energy from the impacting projectile, said metallic material being ~~and is selected from~~ at least one of a metallic material that undergoes a reversible phase change upon absorbing energy and a metallic material that exhibits an elastic strain deformation of at least 5%; and at least one second layer that is continguous with and metallurgically bonded to the at least one energy absorbing layer, said second layer consisting essentially of a metallic material.

2. (Cancelled) ~~The armor of claim 1, wherein the armor comprises a plurality of layers, including a first layer of said metallic material~~.

3. (Cancelled)

4. (~~Original~~Currently Amended) The armor of claim 1, wherein said metallic material that undergoes a reversible phase change upon absorbing energy undergoes a reversible endothermic phase change when heated to a predetermined temperature.

5. (Original) The armor of claim 4, wherein said predetermined temperature is at least -50°C and is no greater than 200°C.

6. (Currently Amended) The armor of claim 5, wherein said metallic material that absorbs energy from the impacting projectile is selected from the group consisting of nickel-titanium alloys, copper-zinc alloys, and copper-aluminum-nickel-manganese alloys.

7. (Currently Amended) The armor of claim 6, wherein said metallic material that absorbs energy from the impacting projectile is an alloy consisting essentially of 45 up to 55 atomic percent nickel, 45 up to 55 atomic percent titanium, and incidental impurities.

8. (Currently Amended) The armor of claim 7, wherein said metallic material that absorbs energy from the impacting projectile is Nitinol.

9. (Currently Amended) The armor of claim 1, wherein the armor comprises a first plate including a first energy absorbing layer and a second energy absorbing layer, wherein said first energy absorbing layer is a layer of a metallic material that absorbs energy by a reversible phase change, and wherein said second energy absorbing layer is a layer of a metallic material that absorbs energy by elastic deformation and exhibits elastic strain of at least 5%; and wherein at least one of the first energy absorbing layer and the second energy absorbing layer is continuous with and metallurgically bonded to the at least one second layer.

10. (Curently Amended) The armor of claim ~~2~~1, wherein said at least one energy absorbing layer ~~first layer~~ is a first plate, and said at least one second layer is ~~the armor further comprising a second plate, said~~a second plate, and

wherein said second plate consists essentially of a metallic material that is ~~comprising a material that differs~~ different from said metallic material of the at least one energy absorbing layer.

11. (Original) The armor of claim 10, wherein said second plate comprises a material selected from the group consisting of titanium, gamma phase titanium-aluminum, α titanium alloy, β titanium alloy, and αβ titanium alloy.

12. (Withdrawn) The armor of claim 11, wherein said second plate comprises an α titanium alloy that is at least one of grades 1-4 CPTi.

13. (Previously Presented) The armor of claim 11, wherein said second plate comprises an αβ titanium alloy that is Ti(6-4).

14. (Withdrawn) The armor of claim 11, wherein said second plate comprises a β titanium alloy that is at least one of Ti(10-2-3) and Ti(15-3-3-3).

15. (~~Original~~Cancelled) ~~The armor of claim 10, wherein said second plate is contiguous with said first plate.~~

16. (Original) The armor of claim 15, wherein said second plate is diffusion bonded to said first plate.

17. (Currently Amended) The armor of claim 10, further comprising a third plate disposed opposite said second plate and comprised of a material that differs from said metallic material of said first plate.

18. (Previously Presented) The armor of claim 17, wherein said third plate comprises a material selected from the group consisting of titanium, gamma phase titanium-aluminum, α titanium alloy, β titanium alloy, and αβ titanium alloy.

19. (Currently Amended) The armor of claim ~~21~~ 1, wherein said ~~first~~ at least one energy absorbing layer is a first plate ~~and said metallic material comprises an alloy~~ consisting essentially of 45 up to 55 atomic percent nickel, 45 up to 55 atomic percent titanium, and incidental impurities, and wherein ~~the armor~~ said at least one second layer is ~~further comprising a~~ second plate consisting essentially of a metallic material ~~including a material~~ selected from the group consisting of titanium, gamma phase titanium-aluminum, α titanium alloy, β titanium alloy, and αβ titanium alloy.

20. (Cancelled) ~~The armor of claim 19, wherein said first plate is contiguous with said second plate~~.

21. (Original) The armor of claim 19, further comprising a third plate disposed opposite said second plate and comprising a material that differs from said first plate.

22. (Previously Presented) The armor of claim 21, wherein said third plate comprises a material selected from the group consisting of titanium, gamma phase titanium-aluminum, α titanium alloy, β titanium alloy, and αβ titanium alloy.

23. (Previously Presented) The armor of claim 21, wherein said first plate is contiguous with said third plate.

24. (~~Withdrawn~~Cancelled) ~~A method of making an armor plate, wherein the armor is capable of withstanding the impact of a projectile impacting the armor, the method comprising:~~

~~providing a first plate comprising at least one energy absorbing layer of a metallic material that absorbs energy from the impacting projectile by at least one mechanism selected from a reversible phase change and an elastic strain deformation of at least 5%;~~

~~providing a second plate of a material differing from the first plate;~~

~~contacting the first plate and the second plate; and~~

~~bonding the first plate to the second plate and, optionally, reducing a thickness dimension of the first plate and the second plate~~.

25. (~~Withdrawn~~Cancelled) ~~The method of claim 24, wherein the first plate comprises a first energy absorbing layer and a second energy absorbing layer, wherein one of said first energy absorbing layer and said second energy absorbing layer is a layer of said metallic material, and wherein said first energy absorbing layer contacts said second energy absorbing layer.~~

26. (~~Withdrawn~~Cancelled) ~~The method of claim 24, wherein contacting surfaces of the first plate and the second plate are cleaned before contacting the first plate and the second plate.~~

27. (WithdrawnCancelled) ~~The method of claim 24, wherein the metallic material undergoes a reversible endothermic phase change when heated to a predetermined temperature.~~

28. (WithdrawnCancelled) ~~The method of claim 27, wherein the predetermined temperature is at least -50°C and is no greater than 200°C.~~

29. (WithdrawnCancelled) ~~The method of claim 28, wherein the metallic material is selected from the group consisting of nickel-titanium alloys, copper-zinc alloys, and copper-aluminum-nickel-manganese alloys.~~

30. (WithdrawnCancelled) ~~The method of claim 29, wherein the first plate is of an alloy consisting essentially of 45 up to 55 atomic percent nickel, 45 up to 55 atomic percent titanium, and incidental impurities.~~

31. (WithdrawnCancelled) ~~The method of claim 24, wherein the second plate comprises a material selected from the group consisting of titanium, gamma phase titanium aluminum, α titanium alloy, β titanium alloy, and α-β titanium alloy.~~

32. (WithdrawnCancelled) ~~The method of claim 31, wherein the second plate comprises at least one of grades 1-4 CPTi.~~

33. (WithdrawnCancelled) ~~The method of claim 31, wherein the second plate comprises Ti(6-4).~~

34. (~~Withdrawn~~Cancelled) ~~The method of claim 31, wherein the second plate comprises at least one of Ti(10-2-3) and Ti (15-3-3-3).~~

35. (~~Withdrawn~~Cancelled) ~~The method of claim 24, wherein bonding the first plate and the second plate comprises:~~

~~heating the first plate and second plate; and~~

~~applying bonding pressure to the first plate and the second plate to provide a metallurgical bond.~~

36. (~~Withdrawn~~Cancelled) ~~The method of claim 35, wherein applying bonding pressure to the first plate and the second plate comprises rolling the first plate and the second plate.~~

37. (~~Withdrawn~~Cancelled) ~~The method of claim 24, further comprising:~~

~~providing a third plate of a material differing from the first plate;~~

~~disposing the third plate opposite the second plate;~~

~~contacting the third plate and the first plate; and~~

~~bonding the first plate to the third plate.~~

38. (~~Withdrawn~~Cancelled) ~~The method of claim 37, wherein contacting surfaces of the first plate and the third plate are cleaned before contacting the first plate and the third plate.~~

39. (~~Withdrawn~~Cancelled) ~~The method of claim 37, wherein the third plate comprises a material selected from the group consisting of titanium, gamma~~

~~phase titanium-aluminum, α titanium alloy, β titanium alloy, and αβ titanium alloy.~~

40. (~~Withdrawn~~Cancelled) ~~The method of claim 39, wherein the third plate comprises at least one of grades 1-4 CPTi.~~

41. (~~Withdrawn~~Cancelled) ~~The method of claim 39, wherein the third plate comprises Ti(6-4).~~

42. (~~Withdrawn~~Cancelled) ~~The method of claim 39, wherein the third plate comprises at least one of Ti(10-2-3) and Ti (15-3-3-3).~~

43. (~~Withdrawn~~Cancelled) ~~The method of claim 37, wherein bonding the first plate and the third plate comprises:~~

~~heating the first plate and third plate; and~~

~~applying bonding pressure to the first plate and the third plate to provide a metallurgical bond.~~

44. (~~Withdrawn~~Cancelled) ~~The method of claim 43, wherein applying bonding pressure to the first plate and the third plate comprises rolling the first plate and the third plate.~~

45. (~~Previously Presented~~Currently Amended) An article of manufacture including an armor capable of resisting penetration by a projectile impacting the armor, the armor comprising at least one energy absorbing layer consistnig essentially of a metallic material that absorbs energy from the impacting projectile and is selected from a metallic material that undergoes a

reversible phase change upon absorbing energy and a metallic material that exhibits an elastic strain deformation of at least 5%.

46. (Original) The article of manufacture of claim 45, wherein the article is an armored vehicle.

47. (~~Withdrawn~~Cancelled) ~~A method of absorbing energy from a projectile, the method comprising forming an armor comprising at least one layer of a metallic material that absorbs energy from the projectile impacting the armor, wherein said metallic material is selected from at least one of a metallic material that undergoes a reversible phase change upon absorbing energy and a metallic material that exhibits an elastic strain deformation of at least 5%.~~

48. (~~Withdrawn~~Cancelled) ~~The method of claim 47, wherein the armor comprises a plurality of layers, including a layer of said metallic material.~~

49. (~~Withdrawn~~Cancelled) ~~The method of claim 47, wherein said metallic material is selected from the group consisting of nickel titanium alloys, copper zinc alloys, and copper aluminum nickel manganese alloys.~~

50. (~~Withdrawn~~Cancelled) ~~A method of protecting an article of manufacture against penetration from an impacting projectile, the method comprising applying to the article of manufacture an armor capable of withstanding penetration from the impacting projectile, the armor comprising at least one layer of a metallic material that absorbs energy from the projectile impacting~~

~~the armor, wherein the metallic material is selected from at least one of a metallic material that undergoes a reversible phase change upon absorbing energy and a metallic material that exhibits an elastic strain deformation of at least 5%.~~

51. (~~Withdrawn~~Cancelled) ~~The method of claim 50, wherein the armor comprises a plurality of layers, including at least one layer of the metallic material.~~

52. (~~Withdrawn~~Cancelled) ~~The method of claim 50, wherein the metallic material is selected from the group consisting of nickel-titanium alloys, copper-zinc alloys, and copper-aluminum-nickel-manganese alloys.~~

53. (~~Withdrawn~~Cancelled) ~~The method of claim 50, wherein the metallic material consists essentially of 45 up to 55 atomic percent nickel, 45 up to 55 atomic percent titanium, and incidental impurities.~~

54. (~~Withdrawn~~Cancelled) ~~The method of claim 50, wherein the metallic material is Nitinol.~~

55. (~~New~~Currently Amended) An armor plate comprising at least one energy absorbing layer consisting essentially of a metallic material selected from at least one of a metallic material that undergoes a reversible phase change upon absorbing energy and a metallic material that exhibits an elastic strain deformation of at least 5%.

56. (~~New~~Currently Amended) An armor comprising:

a first plate comprising at least one energy absorbing layer consisting essentially of a metallic material selected from at least one of a metallic material that undergoes a reversible phase change upon absorbing energy and a metallic material that exhibits an elastic strain deformation of at least 5%;

a second plate ~~adjacent~~ contingous with and metallurgically bonded to at least a portion of said first plate, said second plate ~~comprising~~ consisting essentially of a metallic material that differs from said metallic material of said first plate; and

a third plate disposed opposite said second plate, said third plate comprising a material that differs from said metallic material of said first plate.

57. (~~New~~Currently Amended) An armored vehicle including an armor plate, said armor plate comprising at least one energy absorbing layer consisting essentially of a metallic material selected from at least one of a metallic material that undergoes a reversible phase change upon absorbing energy and a metallic material that exhibits an elastic strain deformation of at least 5%.

58. (~~New~~Currently Amended) An armored vehicle including an armor, said armor comprising:

a first plate comprising at least one energy absorbing layer consisting essentially of a metallic material selected from at least one of a

metallic material that undergoes a reversible phase change upon absorbing energy and a metallic material that exhibits an elastic strain deformation of at least 5%;

a second plate ~~adjacent~~ continuous with and metallurgically bonded to at least a portion of said first plate, said second plate ~~comprising~~ consisting essentially of a metallic material that differs from said metallic material of said first plate; and

a third plate disposed opposite said second plate, said third plate comprising a material that differs from said metallic material of said first plate.

* * * * *